

Federal Highway Administration University Course on Bicycle and Pedestrian Transportation

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LESSON 19: GREENWAYS AND SHARED-USE PATHS309

19.1 The popularity of many urban paths has shown that large volumes of pathway traffic, with a diverse user mix, can create congested and conflictive path conditions similar to that on urban highways. Therefore, planning and design of shared-use paths must be done with the same care and attention to recognized guidelines and user needs as the design of on-roadway bikeways and other transportation facilities.

19.3 Shared-use paths are typically used by a diverse set of users representing different travel modes, using different types of equipment and traveling at different speeds (see figure 19-1). It is important to understand, even within the basic user categories of bicyclists, pedestrians, and skaters, how diverse path users can be. A recent study, *Characteristics of Emerging Road and Trail Users and Their Safety*, begins to document the various characteristics of these users and their equipment.(2)

- Bicyclists include adults using traditional bicycles, but also child bicyclists, cyclists pulling trailers or trail-a-bikes, and riders of tandem bicycles, recumbent bicycles, hand cycles, tricycles, and a variety of four-wheeled human-powered vehicles.
- Pedestrians include joggers, runners, and people walking dogs and pushing strollers, as well as disabled people. Today, disabled and injured people have a wide variety of assistive devices available to aid in travel or enable participation in trail activities, including powered and manual

wheelchairs, powered scooters, tricycles, hand cycles, and racing wheelchairs, as well as the more traditional, crutches, walkers, and canes.

- Skaters include users as diverse as in-line skaters, kick scooters, skateboarders, and people using roller-skis.

In addition to diverse users and a variety of equipment used, shared-use paths serve a wide variety of trip purposes. User behavior, such as travel speed and willingness to make stops, varies considerably with different trip purposes. Especially in urban and suburban areas, paths are routinely used for commuting to work or school, running errands, visiting friends, getting exercise, observing nature, and seeking recreation and enjoyment of the outdoors.

Moreover, people of all ages and abilities use and enjoy shared-use paths—from the very young to the very old, from the novice cyclist to the marathon trainer. Accommodating and balancing the various needs created by this diverse user market is a central challenge for today’s shared-use path planners and designers.

19.4 User Conflict

User conflicts can emerge when user goals differ. In *Conflicts on Multiple-Use Trails*, Moore urges trail planners, designers, and managers “not to treat conflict as an inherent incompatibility among different trail activities, but as goal interference attributed to another’s behavior.”⁽³⁾ In addition to following good trail planning and design principals, Moore describes how user conflicts can be successfully minimized through effective path management.

Understanding the diverse social and operational needs of expected users and designing trails to accommodate projected volumes and mode mixes is critical to building successful trail systems—trails

that will serve multiple roles in a community's transportation and recreation network.

19.5 Shared-Use Path Types and Settings

Shared-use paths can be developed on a variety of rights-of-way and exist in many types of settings, including urban, suburban, exurban, and rural. Increasingly long paths use a variety of rights-of-way and pass through many diverse environments. The following is a list of the most common shared-use path types:

- Rail-trails—Paths created on abandoned railroad corridors.
- Rails-with-trails—Paths created adjacent to active rail lines (see figure 19-2), such as freight railroads, commuter rail lines, light rail, or other rail transit facilities.
- Greenway trails—Paths incorporated into linear natural areas such as parks or conservation areas, along stream or river corridors, along waterfronts (see figure 19-3) including beaches and shorelines, or along flood control levees, etc.
- Paths adjacent to highways, roads, and parkways—Sometimes referred to as sidepaths.
- Towpaths—Paths created along abandoned canals by using the towpath or canal bed.
- Paths using utility corridors—Such as power lines, water supply, or sewer corridors, irrigation canals, or other utility lines.
- Other paths—Such as those developed within university campuses, on other institutional properties, or within large residential and/or commercial developments.

19.6 Planning

Greenways: A Guide to Planning, Design and Development and Trails for the Twenty-First Century are two well-researched resources on the subject of planning that both emphasize its importance in the process of creating a shared-use path.(4,5) Three key objectives that should be addressed during the planning phase comprise communicating a clear vision, goals, and concept for the facility; building community support; and developing a comprehensive corridor assessment. Other plan

components may include: documentation of community benefits and opportunities, environmental impact assessments, preliminary cost estimates, funding and phasing options, and implementation plans. Public involvement, interagency coordination, and interjurisdictional coordination should also be considered during early planning activities.

Trails for the Twenty-First Century offers a helpful guide to planning process terminology and includes four key steps in the pathway planning process:(5)

1. Trail vision or concept
2. The master plan
3. Preliminary design
4. Construction drawings and documents

Too often, agencies charged with creating a shared-use path fail to understand or adopt a crucial pathway planning principal—that by definition, shared-use paths serve both transportation and recreation functions. As such, they must be planned and designed to be a part of two systems of community infrastructure: parks and recreation, and transportation.

19.8 Greenway Paths

The most common feature of many greenways is a trail...with so many types of users in the United States, there are many types of trails, and elementary though it may seem, it is important to distinguish among them. All greenway trails should be compatible with the natural landscape and its functions.(4)

What distinguishes the typical greenway path from other types of shared-use paths is that the path is only one component of a larger corridor, which is primarily defined by its environmental features or functions, including waterways, forests, wetlands, shorelines, or other natural or restored landscapes. Moreover, the

reason that the corridor exists may not be primarily to create a context for a path, but for larger environmental purposes such as habitat preservation, to absorb and accommodate floodwaters, or to provide parkland and recreation resources for human communities.

Greenway paths may be incorporated into built natural areas such as linear urban parks or parkways, along flood control levees or along urban waterfronts. Greenway paths can also be created in natural areas such as along beaches and shorelines, in conservation areas, or along stream or river corridors.

Greenway paths present unique planning and design challenges. The following issues are especially significant, as many of them have received extensive study and best-practice analysis:

- Positioning the pathway within the greenway corridor.
- Minimizing and managing environmental disturbance and impact, both during path construction and as the path sustains ongoing use.
- Reducing stormwater runoff and protecting against erosion.
- Incorporating environmental restoration such as bioengineering and low-impact stormwater management techniques.
- **Designing the trail to be compatible with or even reinforce the larger goals and purposes of the corridor.**

19.9 Paths Adjacent to Roadways

In select circumstances, locating shared-use paths adjacent to roads may be the best or only option available. In settings such as parkways or roadways with little or no access on one side and sufficient space to provide a path and buffer, locating paths adjacent to roads may be preferable to other options.

Roads or streets that have low motor-vehicle traffic volumes and/or low traffic speeds can also be viable candidates for accommodating sidepaths, especially to provide continuity for a path that is otherwise on an independent right-of-way, but has critical gaps.

However, in typical cases, if a two-way shared-use path is located immediately adjacent to a roadway, some operational problems are likely to occur. The extent of these problems will depend on the context and layout of the roadway, number and nature of cross-streets, driveways and access ramps, and adjacent motor vehicle travel speeds. The AASHTO Guide for the Development of Bicycle Facilities enumerates nine potential problems and safety issues that need to be given serious consideration when planning or designing a shared-use path adjacent to a roadway, as for example:(1)

- When the bicycle path ends, bicyclists going against traffic will tend to continue traveling on the wrong side of the street. Likewise, bicyclists approaching a bicycle path often travel on the wrong side of the street in getting to the path. Wrong-way travel by bicyclists is a major cause of bicycle/automobile crashes and should be discouraged at every opportunity.
- At intersections, motorists entering or crossing the roadway often will not notice bicyclists coming from their right, as they are not expecting contraflow vehicles. Even bicyclists coming from the left often go unnoticed, especially when sight distances are poor.
- Although the shared-use path should be given the same priority through intersections as the parallel highway, motorists falsely expect bicyclists to stop or yield at all cross-streets and driveways. Efforts to require or encourage bicyclists to yield or stop at each cross-street and driveway are inappropriate and frequently ignored by bicyclists.

19.10 Trail Width and Striping

Under most conditions, the recommended paved width for two-directional trails is 3 m (10 ft); however 3.7- to 4.3-m (12- to 14-ft) widths are preferred where heavy traffic is expected (see figure 19-4). In select instances, a reduced width of 2.4 m (8 ft) can be adequate, especially if one or the other of the bicycle or

pedestrian modes has a small percentage of overall use. A recent study, Evaluation of Safety Design and Operation of Shared Use Paths, found that from 3 to 4.9 m (10 to 16 ft), every additional foot in width significantly improves the LOS for bicyclists using shared-use paths.(11) This study also found that centerline stripes have a significant impact on how bicyclists tend to operate on shared-use paths: (11)

A striped centerline has a strong impact on the bicyclist's perception of freedom to maneuver. This finding appears to support the intent of trail designers in providing a centerline, which is to clearly delineate two opposing travel lanes. A centerline reinforces the idea that to pass a slower moving user, the cyclist may need to use the travel lane of opposing trail users, and should pass only when the opposing lane is open...there may be valid safety reasons for providing a centerline stripe, particularly on crowded trails, on curves with limited sight distance, and in other appropriate circumstances. Additional details regarding striping and marking of paths are found in MUTCD.